

~~Claim 1 (amended). A method of synchronizing mobile CDMA radio
receivers in a cellular CDMA mobile radio system, wherein a
first synchronization channel with a first frequency is
provided for transmitting a synchronization signal with a code
that is known to the mobile radio receivers and to base
stations of the mobile radio system, and wherein a
transmission from a base station to a mobile radio receiver
delays the synchronization signal by an unknown time period
and the first frequency is shifted by the transmission to a
second frequency, the method which comprises the following
steps:~~

~~splitting the received synchronization signal into a real part
signal and an imaginary part signal;~~

~~sampling the real part signal and the imaginary part signal to
form sampled signals;~~

~~digitally filtering each sampled signal to correlate the
sampled signal to the known code and to form filtered signals;~~

~~squaring each filtered signal to form squared signals;~~

~~determining a maximum signal level from the squared signals;~~

~~estimating the unknown time period with the maximum signal
level determined in the determining step;~~

despreading the received synchronization signal with the known code and taking into account the time period estimated in the estimating step;

determining a frequency deviation between the first frequency and the second frequency based on the despread received synchronization signal; and

fine-tuning the second frequency to the first frequency.

Claim 5 (amended). The method according to claim 1, which comprises defining the code to be transmitted with the synchronization signal to have a sequence of 256 chips uniquely characterizing the first synchronization channel.

Claim 7 (amended). A device for synchronizing mobile CDMA radio receivers using the method according to claim 1 in a mobile radio system having a first synchronization channel for transmitting a synchronization signal with a code that is known to all the mobile radio receivers and to all base stations of the mobile radio system, comprising:

input signal processing units in a mobile radio receiver for processing the received synchronization signal including a real part signal and an imaginary part signal;

said input signal processing units generating sampled values;

a plurality of delay circuits connected in series with said input signal processing units for receiving an input signal and outputting an output signal, said delay circuits receiving the sampled values and correlating the real part signal and the imaginary part signal with the known code;

multipliers connected to receive the input signal and the output signal of each delay circuit and multiplying a supplied signal with a coefficient;

a first adder connected to receive an output signal from each said multiplier, said first adder outputting a summed signal;

squaring elements each having an input connected to receive the summed signal from a respective said first adder and outputting a squared signal; and

a second adder connected to receive the squared signals from said squaring elements.